PROPOSED PLAN OF REMEDIAL ACTION

Burton Island Old Ash Landfill Site
Operable Units 1 and 3
Sussex County, Delaware
DNREC Project No. DE-1399

April 2008

Delaware Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation & Restoration Branch
391 Lukens Drive
New Castle, Delaware 19720

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Approval:
This Proposed Plan meets the requirements of the Hazardous Substance Cleanup Act.

Approved by:

James D. Werner, Director
Division of Air & Waste Management

30 April 2008
Date

PROPOSED PLAN
Questions & Answers

Burton Island Old Ash Landfill Site Operable Units 1 and 3

What is the Burton Island Old Ash Landfill Site?

This site is an inactive and unoccupied area on the premises of the Indian River Generating Station (IRGS). This site encompasses a 144.23-acre portion of this parcel as well as any area where contaminants from this site may have come to rest.

The site consists of three Operable Units (OUs), as follows:

- **OU1:** shoreline, intertidal zone, and vicinity within the footprint of the portion of the erosion control project surrounding the landfill.
- **OU2:** the landfill/land areas landward (inside) of the footprint of the erosion control project.
- **OU3:** the subtidal sediments and the waters seaward (outside) of the footprint of the erosion control project.

NOTE: *This Proposed Plan applies only to OU1 and OU3. OU2 will be addressed at a later date in a separate document.*

Tax Parcel Numbers: The Site occupies the eastern portion of tax parcel number 2-33-2.00-2.00.

Address: 29416 Power Plant Road, Millsboro, Delaware

Nearest major intersection: Iron Branch Road (Sussex Co. Road 331) and Bunting Road

Area: The landfill occupies 144.23 acres.

Surrounding Property: The site is bordered on the west by the operating portion of the IRGS. Other surrounding land use is wetland and residential. Assawoman Wildlife Area is less than ½ mile downstream.

Zoning: HI-1 (Heavy Industrial)

Site Utilities: None

Surface water: The site is on a peninsula between the tidal waters of Indian River and Island Creek.

Topography: The site consists primarily of fill material (coal ash) deposited to a depth of approximately 10 to 20 feet on former wetlands and subaqueous lands. The topography is uneven over most of the site, with steep-sided depressions found in many areas on either side of the relatively level central roadway. Generally, the shorelines are relatively steep but are intermittently fringed with tidal salt marsh.

Groundwater: The disposal site is underlain by the Columbia sand deposits (Pleistocene age) which blanket the entire central and southern portions of the State. These deposits range in thickness from less than 50 to over 125 feet in southern Delaware and consist of predominantly medium-grained sand with

varying mixtures of silt and gravel. Shallow groundwater on the Site is not used, and is expected to flow radially toward the surface water bodies that surround the Site.

What happened at the Burton Island Old Ash Landfill Site?

IRGS is an active coal-fired electrical generating facility which has operated from 1957 through the present. The previous plant owner-operator, Delmarva Power & Light Company (DP&L) used the Burton Island Landfill for ash disposal from 1957 to 1979. Also, it has been reported to have been used for disposal of dredge spoils. The current site owner/operator is Indian River Power LLC (IRPLLC) (an affiliate of NRG Energy), which purchased IRGS from DP&L in 2001.

In the summer of 2005, DNREC personnel observed erosion of ash-like material into Indian River and Island Creek. DNREC conducted a site reconnaissance and obtained one sample each of sediment and soil. Both samples were found to be contaminated with metals above DNREC's Uniform Risk-Based Standards (URS).

DNREC notified IRPLLC of the need for investigation and possible remediation. IRPLLC entered into a Voluntary Cleanup Agreement with DNREC SIRB to address the contamination.

What is the environmental problem at the Burton Island Old Ash Landfill Site?

Soils, sediments, shallow groundwater, and surface water are contaminated by metals commonly associated with coal ash from electric generating plants. The Constituents of Potential Concern (COPC) included arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, and zinc.

In 2007, Shaw Environmental, Inc., conducted a Facility Evaluation (FE) on all three OUs on behalf of NRG and IRPLLC. The FE included sampling of shoreline and offshore sediments, surface water, soil, and shallow groundwater. The FE also included a Human Health Risk Assessment and a Screening-Level Ecological Risk Assessment. DNREC reviewed the FE report and determined that:

- With respect to Operable Unit 1 (OU1) (shoreline sediments) and OU3 (offshore sediments and waters), the FE, subject to specific comments and corrections mandated by DNREC, was sufficiently detailed and comprehensive to serve as a Remedial Investigation (RI).

- With respect to OU2, the FE was **not** sufficiently detailed and comprehensive to serve as an RI, and that additional work will be required to complete the RI of OU2. Therefore, OU2 cannot be addressed in this document.

What does the owner want to do at the Burton Island Old Ash Landfill Site OU1 and OU3?

OU1: NRG/IRPLLC intend to install erosion control/bank stabilization measures along OU1. The erosion control measures consist of:

- Installation of armor stone and large concrete blocks underlain by geotextile (synthetic fabric) along the shorelines of Burton Island.
- Enhancement or creation of tidal marsh along shoreline areas where wave energies are sufficiently low to permit its survival.

OU3: NRG/IRPLLC intend to take no further action with respect to OU3.

What clean-up actions have been taken at the Burton Island Old Ash Landfill Site OU1 and OU3?

None.

What additional clean-up actions are needed at the Burton Island Old Ash Landfill Site OU1 and OU3?

DNREC's clean-up plans include erosion control measures to prevent further erosion of the landfill into surface water. *(See Figure 5.)*

DNREC proposes the following cleanup actions for **OU1**, to be undertaken by NRG/IRPLLC:

1. Erosion control measures as described in Subaqueous Lands Permit: SP-406/06/Water Quality Certification: WQ-395/07 issued by the DNREC Wetlands and Subaqueous Lands Section, *i.e.,*
    a. Installation of armor stone ("riprap") underlain by geotextile (synthetic fabric) along the shorelines of Burton Island.
    b. Enhancement or creation of tidal marsh along shoreline areas where wave energies are sufficiently low to permit its survival.
2. Adoption of an Operations and Maintenance (O&M) Plan to insure the continued integrity of the remedy. (The Site Owner may elect to submit an O&M Plan covering both OU1 and OU2 following the completion of any remedial action that may be required for OU2.)The O&M Plan, the provisions of which are subject to DNREC approval, shall include, at a minimum:
    a. Annual monitoring of sediment quality immediately offshore; frequency, duration, parameters and locations of sampling to be approved by DNREC.
    b. Annual monitoring of the armor stone erosion control structures.
    c. Annual monitoring of the survival and integrity of the shoreline wetlands.
    d. Methods of securing the site to prevent public exposure to any contamination.

e. Performance Standards for the above.

f. Requirements for timely corrective measures in the event that the remedy is not performing as designed or is not protective of human health and welfare and the environment.

3. Adoption of a Uniform Environmental Covenant restricting future use of OU1.

Based on the findings of the FE report that no significant risk is posed by the offshore sediments, **no further action** is proposed for **OU3**.

What are the long term plans for the Site after the cleanup?

OU1: NRG/IRPLLC intends to maintain the area in an unused state, secured from public entry, and to implement remedial and O&M measures as required by the DNREC-approved O&M Plan.

OU3: OU3 lies within public waters of the State of Delaware and will remain open to the public on the same basis as before.

How can I find additional information or comment on the Proposed Plan?

The complete file on the site including the Facility Evaluation Report is available at the DNREC office, 391 Lukens Drive in New Castle. Most documents are also found on:

http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/sirb/

The 20-day public comment period begins on May 5, 2008 and ends at close of business (4:30 pm) on May 27, 2008. Please send written comments to the DNREC office or call Gregory DeCowsky, Project Manager, at: 302-395-2600.

GMD: tlw; GMD08018.doc; DE 1399 II B 8

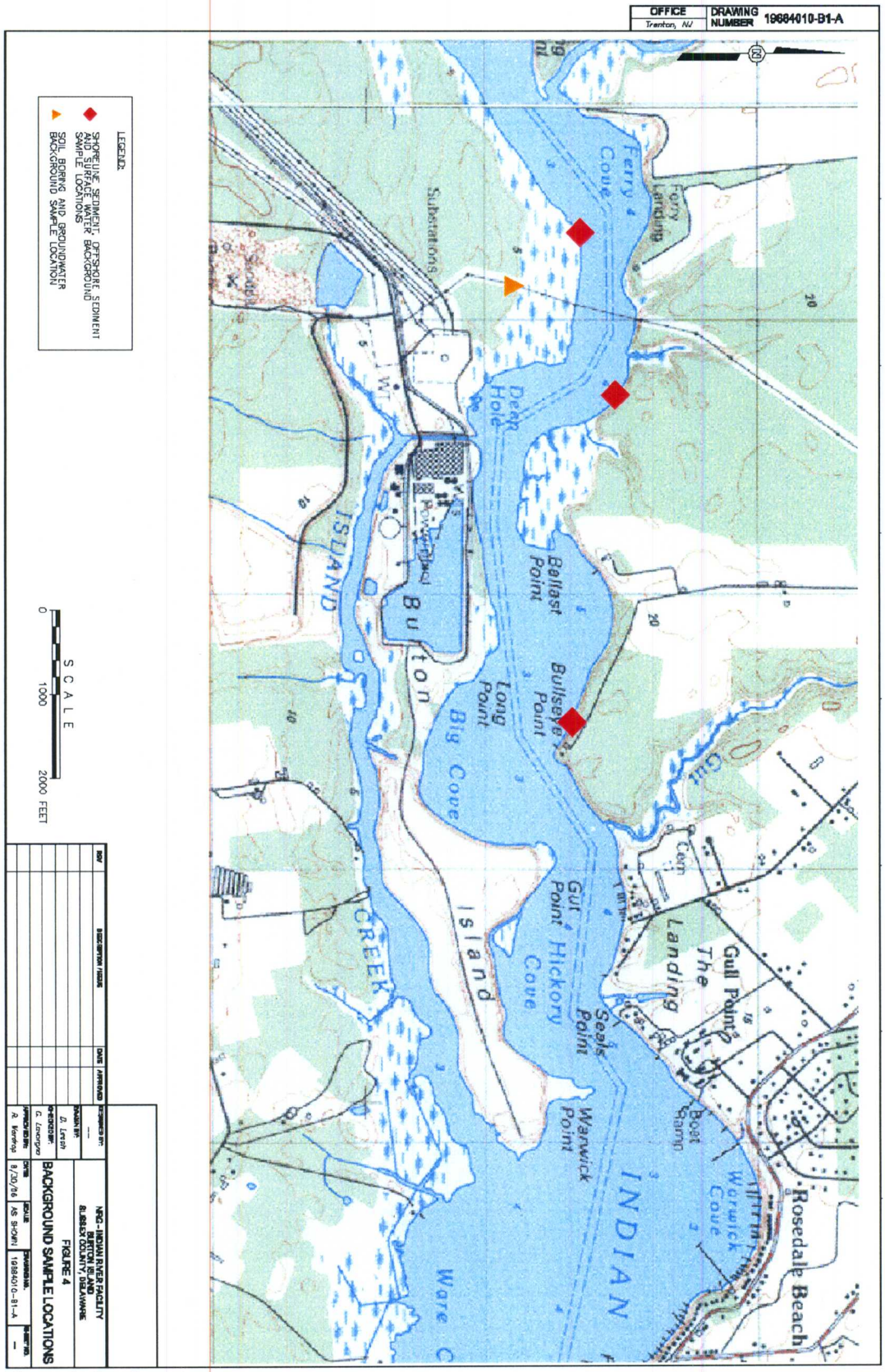

Figure 1: *Site Location.*

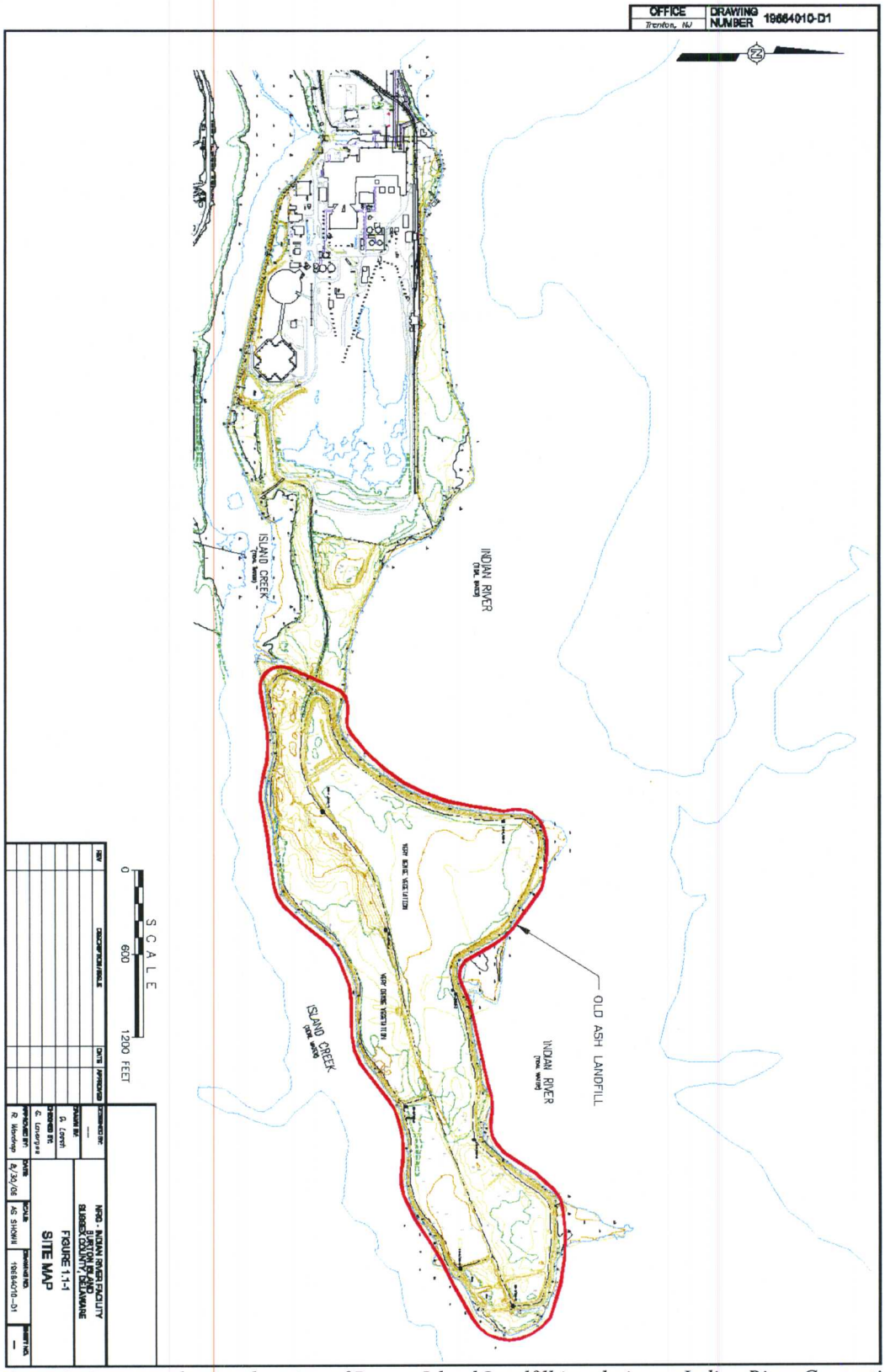

Figure 2. *Site map showing location of Burton Island Landfill in relation to Indian River Generating Station.*

Figure 3: *Erosion, south (Island Creek) side of Burton Island, August, 2005.*

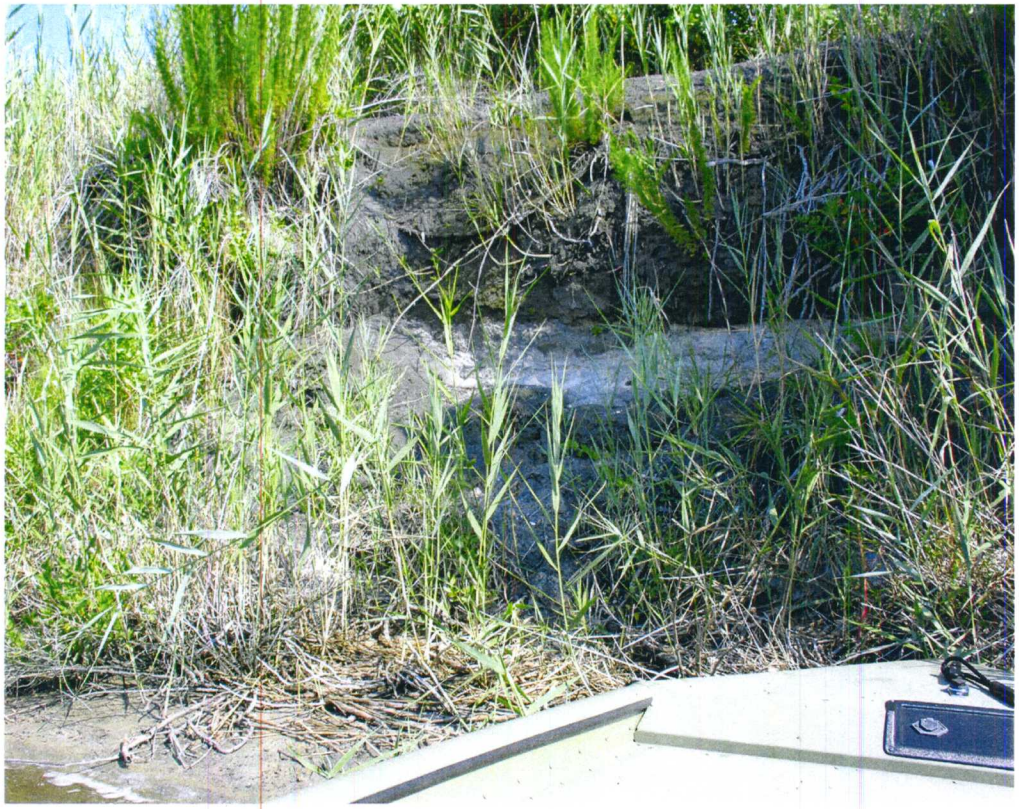

Figure 4: *Erosion; north (Indian River) side of Burton Island, August, 2005.*

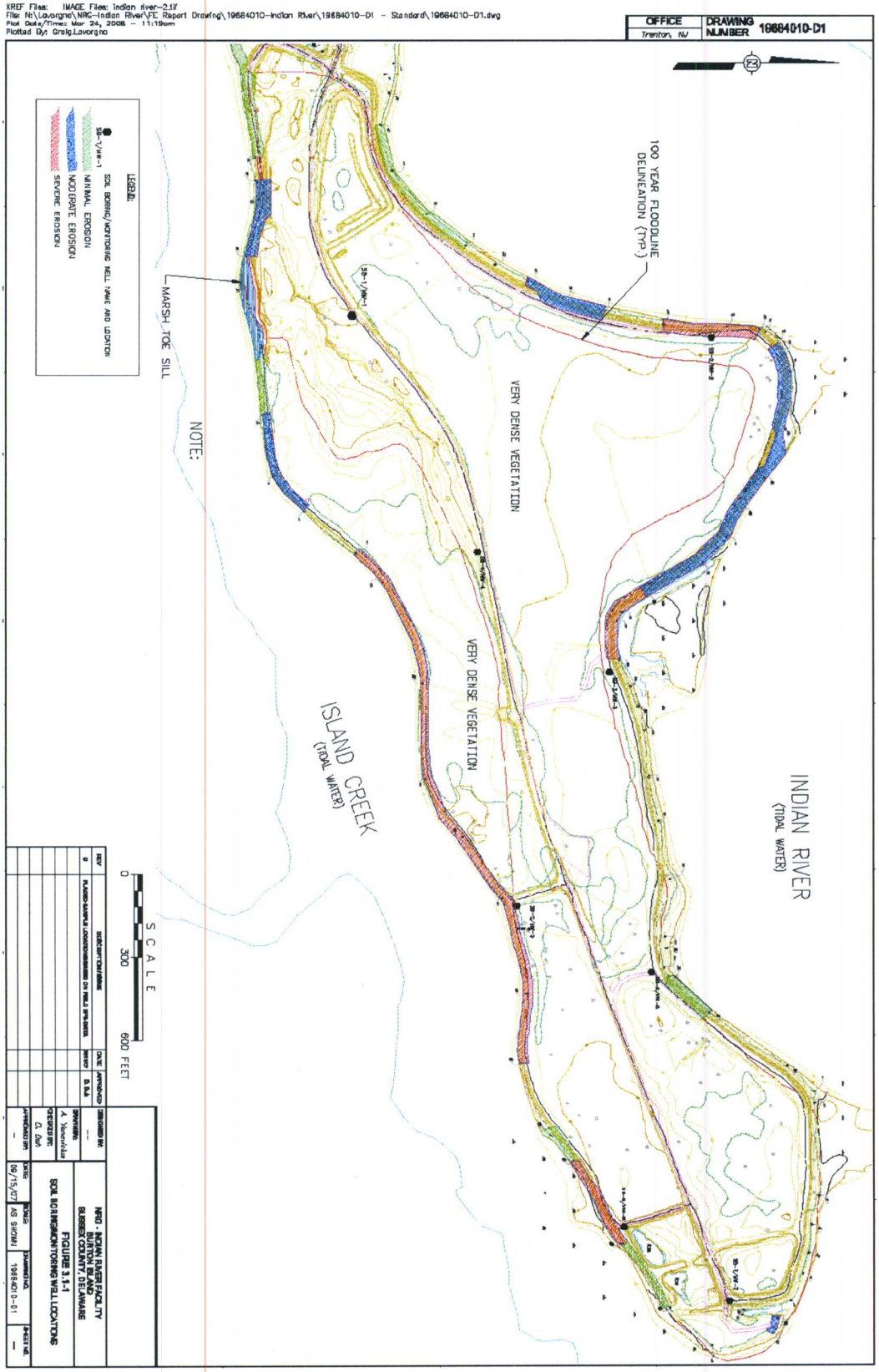

Figure 5. *Erosion control/bank stabilization plan layout.*

Figure 6. *Erosion control/bank stabilization under construction along the perimeter of the active portion of the plant, March, 2008. Similar measures are proposed to be employed for OU1.*

Glossary of Terms
Used in this Proposed Plan

Aquifer	A geologic formation, group of formations, or a part of a formation capable of yielding groundwater to wells or springs.
Constituent of Potential Concern (COPC)	These are potentially harmful substances found at a site at concentrations above acceptable levels (at this site, certain metals,). Identification of COPC is the first step in a Risk Assessment.
Contamination	The introduction of harmful or hazardous matter into the environment.
Disposal	The discharge, deposit, injection, dumping, spilling, leaking or placing of any hazardous substance into or on any land, water or into the air so that such hazardous substance or any constituent thereof may enter the environment.
Exposure	Contact with a substance through inhalation, ingestion, or direct contact with the skin. Exposure may be short term (acute) or long term (chronic).
Facility Evaluation (FE)	If the initial investigation indicates a release or imminent threat of release, DNREC conducts an FE to assess the related risk. This may consist of a review of general facility and existing information and/or a field investigation, including sampling of soil, air, groundwater, surface water, sediments, and animals or plants as appropriate. The scope is flexible and depends on the specific conditions of the facility.
Final Plan of Remedial Action	DNREC's proposal for cleaning up a hazardous site after it has been reviewed by the public and finalized.
Geotextile	Permeable fabrics which, when used in association with soil, have the ability to separate, filter, reinforce, protect, or drain. In the case of OU1, a geotextile base under the armor stone will be used to stabilize the sediment surface and help prevent the erosion of contaminants into surface water and the exposure of aquatic organisms to contaminants.
Groundwater	Water below the land surface in the zone of saturation.

Hazardous Substance	(a) Any hazardous waste as defined in 7 *Delaware Code*, Ch. 63, or any hazardous waste designated by regulation issued under 7 *Del. C.*, Ch. 63; (b) Any hazardous substance as defined in CERCLA or regulations issued under CERCLA; (c) Petroleum, including crude oil or any fraction thereof; however, any release of hazardous substances from an underground storage tank which is regulated by 7 *Del. C.*, Ch. 74 or regulations issued under it is not subject to these regulations except that such a release is eligible for funding under Subsection 14.1; (d) Any substance in sufficient concentrations which the Secretary through regulation determines may present risk to the public health, welfare, or the environment.
Hazardous Substance Cleanup Act (HSCA)	*Delaware Code* Title 7, Chapter 91. The law that enables DNREC to identify parties responsible for hazardous substances releases and requires cleanup with oversight of the Department.
No Further Action (NFA)	A No Further Action decision can be issued at the end of an investigation or the completion of the remedy. NFA means that no known danger exists at the site.
Operable Unit (OU)	The cleanup of a site can be divided into a number of operable units depending on the complexity of the problems associated at a site. Operable units may address geographic portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions that are concurrent but located in different parts of a site. The determination of an operable unit may vary over time as a result of change in activity or need.
Operations & Maintenance (O&M)	The activities necessary to provide for continued effectiveness and integrity of a remedial action after it is completed. O&M includes all activities needed to ensure effective operation of the remedy under both normal conditions and emergencies. Post-cleanup compliance monitoring (regular testing to determine if the prescribed cleanup levels have been met and if the treated effluent or emission meets discharge requirements) is often included under O&M.

Owner or Operator	(a) Any person owning or operating a facility. (b) Any person who previously owned, operated, or otherwise controlled activities at a facility. (c) The term "owner or operator" does not include an agency of the State or unit of local government that acquired title or control of the facility involuntarily through bankruptcy, tax delinquency, abandonment or other circumstances. (d) The term "control" does not include regulation of the activity by a federal, state or local government agency. (e) The term "owner or operator" does not include a person, who, without participating in the management of a facility, holds indicia of ownership primarily to protect his security interest in the facility.
Proposed Plan of Remedial Action	A plan for cleaning up a hazardous site submitted by DNREC and subject to public comments.
Release	Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of a hazardous substance, pollutant or contaminant into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant), but exclud[ing]: (a) any release which results in exposure to a person solely within his or her workplace, with respect to a claim which such person may assert against his or her employer; provided, however, that this exclusion does not apply to any such release which also results in exposure to the environment; (b) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine; (c) the appropriate and legal application of fertilizers and pesticides; and (d) any discharges in compliance with State permits issued in conformance with Title 7 of the *Delaware Code* and federally permitted releases under CERCLA.
Remedial Investigation (RI)	A detailed evaluation of a release or imminent threat of release of a hazardous substance. An RI is conducted to determine the extent of contamination and the risks to public health and welfare and the environment. It typically includes site characterization, field investigations, and performance of risk assessments as well as collection of engineering data that may be required to complete a feasibility study and or remedial design.

Remedy	Any action, response, or expenditure consistent with the purposes of HSCA, or any regulations or guidance issued under HSCA to identify, minimize, or eliminate any imminent threat posed by any hazardous substances, including preparation of any plans, conducting of any studies and any investigative, oversight, or monitoring activities, and any health assessments, risk assessments, or similar studies conducted to determine the risk or potential risk to public health or welfare or the environment.
Risk	Likelihood or probability of injury, disease, or death.
Risk Assessment	The systematic, multi-step process of elimination used to estimate the possible effects of exposure of human populations (**Human Health Risk Assessment** or **HHRA**) or the environment (**Ecological Risk Assessment** or **ERA**) to hazardous substances.
Sediment	A loose unconsolidated deposit of weathering debris, chemical precipitates, or biological debris that accumulates on Earth's surface; often under water. Sediments which become contaminated are often difficult and expensive to clean up, and provide a pathway for exposure of aquatic animals to hazardous substances.
Site Investigation and Restoration Branch (SIRB)	The branch within DNREC's Division of Air and Waste Management (DAWM) which carries out HSCA and the *Delaware Regulations Governing Hazardous Substance Cleanup*, overseeing cleanup and restoration of hazardous substance sites.
Uniform Environmental Covenant	A standardized form of a land use restriction that is recorded on the deed and runs with the land. Provisions governing UECs are found in the Uniform Environmental Covenants Act (UECA).
Voluntary Cleanup Program (VCP)	The remedial process established by DNREC under HSCA, that a party willingly enters into (provided its application is approved by DNREC) for the purpose of conducting a remedy at a facility. When a property is contaminated with hazardous substances there are liabilities under Federal and State laws, regardless of who caused the contamination and when it was caused. Because of these liabilities, old industrial sites (with contamination) may not readily attract developers or buyers. Under the VCP, developers and buyers performing the cleanup of contaminated properties are provided protection from potential liabilities for past contamination, provided certain requirements are met.

What is a *Proposed Plan*?

A Proposed Plan of Remedial Action (Proposed Plan) is a summary of how DNREC plans to clean up a contaminated site. A Final Plan of Remedial Action (Final Plan) is the adoption of the Proposed Plan, after all comments made by the public within the comment period of twenty days have been considered and addressed by DNREC.

The Delaware State Legislature passed the Hazardous Substance Cleanup Act (HSCA) in 1990. The Legislature made sure that members of the public would be informed about environmental problems in their own neighborhoods and have a chance to express their opinion concerning the clean up of those environmental problems before DNREC takes action.

After DNREC studies a site, it summarizes the problems there and proposes one or more possible solutions in a Proposed Plan. The Proposed Plan contains enough information to allow lay persons to understand the site. More detailed information can be found in the reports and documents approved by DNREC. All of the documents and reports created by DNREC or consultants during the course of the investigation of the site are available to the public at the offices of DNREC-SIRB or at DNREC's website:

http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/sirb/sitefiles.asp .

DNREC issues the Proposed Plan by advertising it in at least one newspaper in the county where the site is located. The legal notices for the Proposed Plans and the Final Plans usually run on Wednesdays or Sundays in the legal classified section of the News Journal and/or the Delaware State News. The public comment period begins on the day (Wednesday), or the day after (Sunday) the newspaper publishes the legal notice for the Proposed Plan.

DNREC frequently holds public meetings during the comment period. Those meetings are usually held near the site in the evening. Citizens can request a public meeting if DNREC did not already schedule one.

Comments are collected at the public meetings, by phone or in writing. DNREC considers all comments and questions from the public before the Proposed Plan is finalized and adopted as a Final Plan.
